

Math 113 Calculus -- Homework 4 & Homework 5

Due date: 31 December 2010 Friday

Solve the following two problems. Write your answers in a way to convince the reader that you have understood all the steps involved in the solution.

- *31. A wine glass in the shape of a right-circular cone of height h and semivertical angle α (see Figure 7.14) is filled with wine. Slowly a ball is lowered into the glass, displacing wine and causing it to overflow. Find the radius R of the ball that causes the greatest volume of wine to overflow out of the glass.

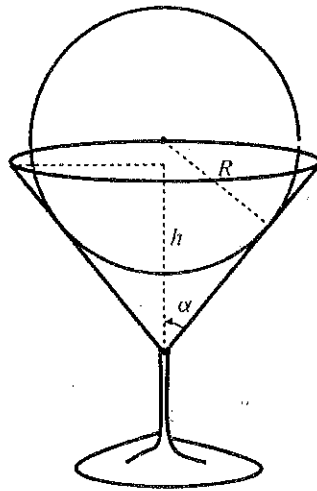


Figure 7.14

$$31. R = \frac{h \sin \alpha}{\sin \alpha + \cos 2\alpha}$$

Answer:

- *32. The finite plane region bounded by the curve $xy = 1$ and the straight line $2x + 2y = 5$ is rotated about that line to generate a solid of revolution. Find the volume of that solid.

(These problems are taken from Adams Calculus)

Comments and questions to sertoz@bilkent.edu.tr
